Terms of Reference

Deliverable Based Local Individual Consultant as Economy Modelling Expert for Preparation of Climate Change Strategy 2050 and Action Plan 2030

1. BACKGROUND

UNDP is on the ground in about 170 countries, working with them on their own solutions to global and national development challenges. As they develop local capacity, they draw on the people of UNDP and its wide range of partners. UNDP's global focus is helping countries build and share solutions to the challenges of: (a) Democratic Governance; (b) Poverty Reduction; (c) Crisis Prevention and Recovery; (d) Environment and Energy and (e) HIV/AIDS. UNDP helps developing countries attract and use aid effectively. In all its activities, UNDP encourages the protection of human rights and the empowerment of women.

UNDP Turkey aims to find practical solutions to Turkey's development challenges and manages projects together with the Turkish Government and other partners to address them. Since 1986 it has implemented over 80 programs across the country. In addition, the UNDP has played a major role in response to crises and disasters in Turkey and the surrounding region.

The immediate objective of the project is to assist the Government of Turkey in the preparation and submission of its 7th NC and 3rd BR to the UNFCCC for the fulfilment of its obligations under the Convention as Annex I Party. The objective of "Support for the Preparation of Turkey's 7th National Communication and 3rd Biennial Report to United Nations Framework Convention on Climate Change Project" (7NC3BR Project) is expected to be achieved via following outcomes:

Outcome 1: National GHG inventory system is strengthened, and national GHG inventory is updated for years 1990 to 2016 in line with NC and BR requirements.

Outcome 2.1: National circumstances are reviewed and updated, institutional arrangements relevant to the preparation of the national communications and biennial reports on a continuous basis are activated and described.

Outcome 2.2: Finance, technology transfer and capacity building needs, constraint and gaps are identified and recommendations for addressing the needs are provided.

Outcome 2.3: Information on research and systematic observation is reviewed and updated.

Outcome 2.4: Information relevant to the Article 6 activities on education, training and public awareness is reflected.

Outcome 3: Using best practices and latest available data, assessment of sectors and interventions contributing to GHG emission reduction (mitigation) at national level is conducted and described.

Outcome 4: Climate change vulnerability assessment, including recommended adaptation measures for priority sectors is reviewed and updated.

Outcome 5: Domestic measurement reporting and verification.

Outcome 6: Preparation and submission of the 7th NC and 3rd BR.

Besides these outcomes, formulating a long-term low greenhouse gas emission development strategy ("LT-LEDS") for Turkey will prepared under this project. LT-LEDs covers Turkey's Climate Change Strategy (LT-LEDs) 2050 and National Climate Change Action Plan for 2023-2030 (NCCAP-2030).

In accordance with Article 4, paragraph 19, of the Paris Agreement, all Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

Long-term strategy outlines how Turkey could pursue its development trajectory while phasing out net emissions over time. Long-term strategy provide an opportunity for Turkey to think through what the Paris goals mean for own long-term emissions trajectories, and in turn, what this implies for the best ways to implement mitigation targets.

In this regard, Turkey's National Climate Change Strategy's vision and strategic targets by 2050 were defined as: Formulating a long-term low greenhouse gas emission development strategy ("LT-LEDS"). Sharing Turkey's ideas and efforts with the world; contributing to the achievement of the long-term targets, including efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

National Climate Change Strategy 2030 and 2050 will play a key role to in the transition towards low carbon development and climate resilient economies. Turkey will determine its long-term goals for climate and development, and direct short-term decision-making to support the necessary shifts to limit global warming under NCCS 2050 and NCCAP 2030. National Climate Change Strategies also serve as a basis for increasing ambition, including its intended nationally determined contributions.

- Within the context of Turkey's LT LEDS, the following main ten principal studies to be realized;
- Evaluation of actions undertaken within the framework of the Turkey's current overall climate change policies and measures for need assessment.
- Stakeholder Analysis and creation of technical working groups composition
- Identification of priority sectors for climate action in Turkey
- Sectoral Coverage
- Identification of modelling approaches
- Climate Change Projections for LT-LEDS 2050
- Climate Change Projections for Turkey's National Climate Change Action Plan for 2023-2030
- Identification of Turkey's vision, mission and activities on climate change, sustainable development and socio- economic objectives for NCCAP 2030 and NCCS 2050.
- Marginal Abatement Cost Analysis of the Turkey's National Climate Change Strategy for 2050.
- Identification of Communication Strategies for NCCAP 2023-2030 and LT-LEDS 2050.

The concept of long-term planning for climate change and development raises unique governance challenges. Ensuring buy-in and ownership of key ministries, departments, and agencies and non-governmental stakeholders over the final strategy is essential if long-term strategies are to be influential in guiding short, medium, and long-term planning and investment decisions across society to initiate an effective and just transition to a low greenhouse gas emission and resilient future.

Also, the analysis of costs of mitigation will be made so it will provide information on the costs of adopting low carbon development options and will be used in the preparation of the Mitigation Plan. Moreover long-term strategies will provide opportunities to improve MRV system, the quality of national data providers, cooperation between state and non-state actors, make research on several topics which provide support Turkey in delivering the National Reports and improving national climate change policies.

In the view of the above, *"Economy Modelling Expert"* will provide consultancy services for supporting the preparation of LT-LEDs 2050 and NCCAP 2030 on GHG Emissions Macro Economic Modelling within the scope of the 7NC3BR Project.

2. OBJECTIVE and SCOPE

The Paris Agreement and its accompanying decision call for Parties to strive to formulate mid-century communicate long-term low-greenhouse gas emission development strategies (LT-LEDS) by 2020. Moreover, the Paris decision requests Parties to communicate a new or updated Nationally Determined Contribution (NDC) by 2020. Long-term strategies play a key role in the transition toward net-zero emissions and climate resilient economies. These strategies set out long-term goals for climate and development and direct short-term decision-making to support the necessary shifts to limit global warming and lift people out of poverty.

Within the context of Outcome 3 of 7NC3BR Project, considering the importance of a long-term structural changes for transition to a low-carbon and resilient economy by 2050, as highlighted by long-term low emissions development strategies (LT-LEDS), National Climate Change Strategy and Action Plan are both important policy documents need to be prepared in a quality, data driven and participatory way. Both policy documents will lead to explore the consequences of policy choices in terms of integrated socio-economic objectives including ensure the gender mainstreaming in planning and implementation of climate change mitigation policies and measures under LT-LEDS context. Regarding LT-LEDS, Turkey will determine ambitious targets and actions for 2050 in a transparent way. Within the scope of the projections for long-term strategy, the projections also will provide a solid baseline for the revision of INDC of Turkey.

The objective and scope of this assignment are to support the Ministry of Environment and Urbanization to prepare and submit below listed two main component considering modelling work.

The assignment will mainly include preparing the following components:

> Component 1: Preparation of Turkey's National Climate Change Action Plan for 2023-2030 (NCCAP 2030).
> Component 2: Preparation of Turkey's National Climate Change Strategy for 2050. (Long Term -Low Emission Development Strategy (LT-LEDS))
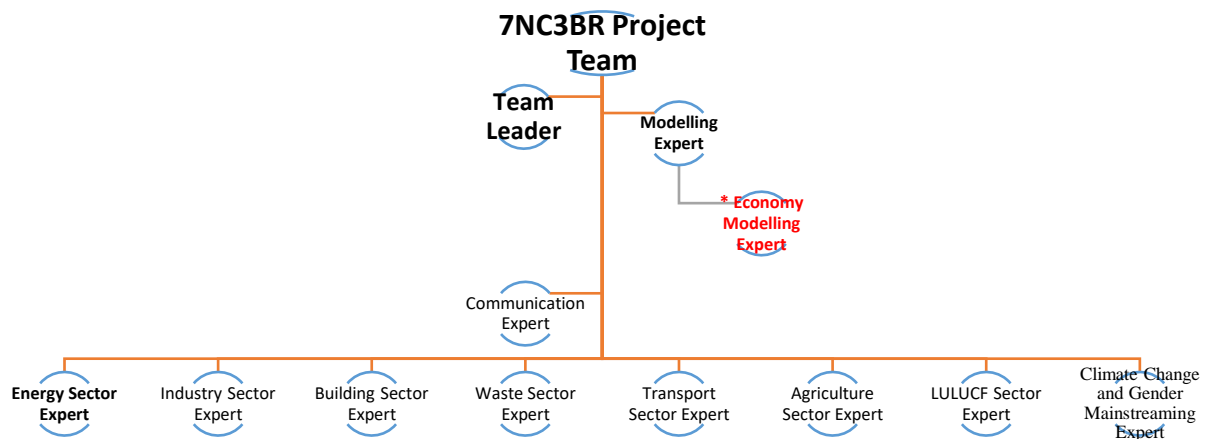
Overall 7 sectoral analysis, data sets, scenarios, assumptions, 2050 sector targets and 2030 climate change mitigation actions will be reported to the Team Leader in close cooperation with the Modelling and Economy Modelling Expert, 7 Sectorial Experts and related Climate Change and Adaptation Department of the Ministry of Environment and Urbanization (MoEU), and the UNDP Project Team. The Individual Consultant (IC) will mainly be responsible for development of Macro-economic model in coordination with modelling expert, sectoral experts and also stakeholders, running model and guide

sectoral experts for the determination of cost of sectoral long term targets and mitigation potentials and actions.

The target audience of the consultancy services includes line Ministries, sector associations, private sector, academia, NGO's.

The IC as Economy Modelling Expert shall develop Macro-economic model, according to the abatement potential, cost of different mitigation options will be assessed and compared both from the view of society and economic agents who will be implementing these options. IC shall deliver guidance, technical inputs, data and information gathering, creating and analyzing the sectoral data for establishment of model, determination of scenarios and assumptions for model work and determination of cost of mitigation actions and targets on 7 sectors with close cooperation with the sectoral experts and also modelling expert. IC shall also responsible for the cost of climate change strategy's targets and climate change mitigation actions by consultation with related sector stakeholders and sectoral experts

The output of the assignment will provide the decision-makers and key stakeholders within the public and private sectors with qualitative analysis and information on the cost of mitigation potentials for key sectors and cost of implementing long term targets and actions in Turkey. Hence, it will provide critical inputs to the discussions at the national level; and, help the MoEU formulate fact-based stakeholder engagement activities and mobilize political support towards implementation.

The IC shall work in coordination with sectoral experts and modelling expert. In total, 7 sectoral experts will develop Climate change strategy targets and action plan actions for their sectors and also help to develop vision and mission for climate change strategy.

The sectors mentioned above are as follows:

- Energy
- Industry
- Buildings
- Waste
- Transport
- Agriculture
- LULUCF

The Assignment Team composed of complementary expertise and competencies and will jointly be responsible for ensuring the quality of the deliverables/outputs of the Assignment and will be managed by the Team Leader within the support of the Project team.

The consultancy services shall be completed in 5 phases in total and each phase shall be completed with the activities described below.

TASK 0. Methodology and Work Plan Meeting (kick-off) and Steering Workshop

The assignment will start with a "Methodology and Work Plan" meeting with the MoEU and UNDP Project team and a "Steering Workshop" with the key stakeholders which will provide substantial input for the "Inception Report" as described below:

0.1 Methodology and Work Plan Meeting with MoEU and UNDP Project Team: A "**Methodology and Work Plan**" (hereinafter, Kick-off Meeting) with the MoEU will be organized to articulate the project tasks and work plan for the conduction of the activities. The meeting will serve as a basis for the MoEU and the IC to make preliminary decisions on several aspects related to how to carry out the study and to validate the roles and responsibilities, timeline and expected outcomes under this assignment.

The IC will finalize the methodology based on the outcomes and feedbacks obtained from the "Steering Workshop" (see below).

0.2 Part II- "Steering Workshop" with key stakeholders: The Steering Workshop (SW) will be carried out with the participants from the key ministries and representatives from the private sector. The aim of the workshop will be to collect initial inputs from the key stakeholders on the necessary information and feedback which the IC will need towards determining a robust methodology and work plan for the assignment. The SW will also help the IC to identify which methodologies (bottom-up, hybrid, etc.) and tools could be suitable for the assignment through understanding the general landscape of available modelling work and data, bottlenecks and testing different assumptions to fill in data gaps.

Overall, the SW will serve as an important tool for the IC to:
a) Get familiarized with the current landscape of modelling and data in Turkey; i.e.; barriers and bottlenecks relevant to data collection, etc.;
b) Understand the general expectations of the stakeholders from climate change strategy and action plan in terms of objective of the low carbon development (i.e.; to achieve low carbon energy generation, achieve emission reductions, boost renewables, carbon pricing, selling credits internationally etc.)
c) Collect initial inputs from the stakeholders (i.e.; type of data, availability, etc.) to prepare the "Inception Report" which includes robust recommendation on the method and approaches to deliver the work; and,
d) Initiate a preliminary discussion on the suitability of the presented models, approaches and tools with the key stakeholders and collect feedback on their applicability from the audience.

During the workshop, the IC will present the potential methodologies and tools available internationally suitable to carry out extensive economic and sectoral modelling combining top-down and bottom-up approaches in support to sound policy impact analysis. The IC will present the audience their objectives and working principles, advantages and disadvantages, prerequisites and requirements. A background note summarising these points will be prepared and distributed at the workshop. The IC will develop, lead and facilitate the workshop with the objective to collect critical information and feedback – notably by leveraging interactive tools and approaches. To this end, prior to the workshop, the IC is expected to prepare discussion and/or informative notes targeting specific participants. These will include key questions for each of the ministries considered key to building robust assumptions and collecting the data necessary to perform the work.

The IC shall present the LT-LEDs country examples, Turkey's sectoral country profile on the economic modelling basis.

The feedback collected from this workshop will provide important steering and guidance to the project team in terms of national needs and circumstances, priorities, bottlenecks and possible improvement paths. The outputs of the SW will constitute important inputs for the IC to facilitate the work.

This meeting is expected to take place at least 1 days.

TASK 1. Inception Report

The IC will prepare economy modelling part of the "Inception Report" which will shed light upon the relevant country examples. The IC will prepare need assessment of economic modelling in terms of long term strategy and action plan, relevant data to determine and measure the fiscal, economic and sectoral impacts of the selected targets and actions. Furthermore, IC will propose a workplan, methodology for the assignment and timeline.

Based on the discussions and outputs from the kick-off meeting and SW, the report will also assess and discuss suitable country examples agreed with the Project Team and methodology and will select and justify the most appropriate combination to deliver the project outputs successfully – including options to leverage existing data and infrastructure and taking into account possible limitations such as confidentiality and data gaps. The Inception Report will also suggest comprehensive approaches and plan to handle those gaps as discussed during the SW.

The Inception Report will also present the IC's understanding of current policy landscape, the potential policy, fiscal, macro-economic and sectoral impacts and mitigation scenarios' costs that will be used by the model.

As data collection is usually one of the most challenging tasks under such kind of assignments, it is very crucial for the IC to build a trust-based and firm engagement with the stakeholders. To this end, the Inception Report should also provide a clear communication plan to establish and maintain robust communication and interaction lines with the stakeholders to ensure smooth flow of data and all other supporting documents and information. The plan will involve the tools that the IC is planning to use such as face-to-face meetings, teleconferences, surveys, etc. and how to use them (who will attend, how many times,etc).

With the approval of the "Inception Report" by the Project Team in consultation with MoEU, both parties will have a clear roadmap of the assignment with the tools and approaches agreed; variables and indicators identified; and, all required data, supporting tools and information requirements are determined with the SW.

As a next step, following the requirements of the scenarios and the model, the IC will move on to collecting the required data, outputs of ghg projections and mitigation potentials of targets and actions from the modelling expert and the development of the model. Tools like surveys to gather information from the stakeholders will also be used.

Within the scope of the consultancy services, "Inception Report" to be developed will include at the minimum the following sections;

      a) Executive Summary
      b) Background
      c) Turkey's Sectoral Overview and Analysis
      d) Selected Methodology and its Scientific Justification
      e) Macro Economic Modelling Overview and Analysis
      f) Need assessment of data gaps, Data needs for model
      g) Data Collection and Sectoral Policy mapping
      h) Work Plan
      i) Timeline
      j) Comparative Analysis of Country examples

The language for Inception Report shall be in English.

Draft Inception Report shall be between **40-50 pages** long and the reports will be sent to the Team Leader for review and will be approved by UNDP by consultation with MoEU. Team Leader will combine all sectors and prepare Final Inception Report. After review of all experts Final Inception Report will be approved by UNDP in consultation with MoEU.

TASK 2. Reference Scenario Formulation

2.1 Data Collection

All data, and supporting information and assumptions, required to deliver the assignment successfully will be collected and developed by the IC with the support of the modelling expert and sectoral experts. The assignment will mainly rely on the publicly available data and information from credible national and international sources such as the national statistics, government publications, World Bank and International Energy Agency. Following the methodology and work plan agreed at the end of the "Inception Phase", a detailed and explanatory (i.e.; type and source of data, etc.) list of necessary data, information and assumptions will be prepared by the IC. The Sectoral experts will review the list and support the IC with the needed information where it is available and possible to share publicly. The Steering Workshop will also be an important tool for the IC to understand the availability of data that is beyond publicly available. The IC is also work closely with the Modelling Expert.

In the absence of readily available local data, benchmark estimates can be initially transferred from other countries, upon good justification and agreement with the Modelling Expert, Sectoral Experts, Project Team and MoEU, where similar estimates were done or from other available literature. These international benchmarks will then be adjusted to Turkish realities with the help of Modelling Expert and Sectoral Experts and additionally verified through a series of technical workshops/meetings with stakeholders. All technology choices and parameters obtained from international sources should be adjusted Turkey in terms of availability, price, etc.

The variables which will be assessed by the model and options will also be clarified during the meetings. These variables include, but, not limited to, gross domestic product, consumption of goods by production sectors, household consumption of goods, labor demand and supply, wage rate, prices, carbon prices, terms of trade, imports and exports of goods and services, investment, capital income, taxes and subsidies, total government revenue, government debt, (sub-)sectoral competitiveness and leakage impacts.

Planned one-to-one meetings with relevant stakeholders to gather data and information should be well considered at the Inception Report phases with the Modelling Expert and Sectoral Experts.

2.2 Reference scenario formulation and Assessment and Development of the Model

The IC will develop the macro economic model (CGE) and tools. The IC will identify the long-term decarbonization pathways compatible with the Paris Agreement and INDC of Turkey (such as under the constraints of net-zero and absolute zero emissions by 2050/70) for the Turkish economy in terms of GHG emissions and energy mix, with a focus on the related sectors and prepare the alternative fossil fuel phase-out pathways (for coal/gas in energy supply and power generation) and the resulting technological patterns and cost impacts on the sectors in Turkey.

Reference scenario as without measures (WOM) will be studied and discussed with the stakeholders by Modelling Expert. Reference Scenario is assumed that none of the existing or additional policies and measures are implemented from a chosen base year.

Reference scenario formation determination of policies that are going to be included as well as technologies that are going to be permitted by the government and confirmation of the reference scenario for each sector is needed. This task should be devoted for this purpose.

The times model used by Modelling Expert will also combine the assessment of technical emission reduction opportunities that are plausible for Turkey. Mitigation targets with the 2050 vision and also mitigation actions to implement this climate change long term strategy will be delivered from the model.

Country-specific aligned scenarios will be developed for all sectors and economy-wide scenarios in line with the INDC targets and mitigation options.

Identification of targets that will be enshrined in national policy. Such targets will include legally binding economy-wide GHG emissions target, supported by specific sector-level GHG emission targets. Such GHG emission targets, will enshrine in national policy, will be derived from theoretical long-term scenario modelling. Non-GHG targets will further supplement these national-level and sector-level

GHG emission targets, for example targets for coal and fossil fuel phase-outs or renewable and energy efficiency targets.

The IC will prepare macro economic analysis of outputs coming from Modelling Expert. Costs of actions and targets and also the cost of mitigation actions for government. What would be the real interest and also what would be the effects of green bonds?

The IC will develop the methodology and work plan within the Inception Report accordingly to ensure high quality results are yielded at the end of the work including sensitivity and uncertainty analysis.

Non-limitative list of key output parameters to guide the assessment are impact on GDP, growth and investment; sectoral shifts and changes in outputs; fiscal impacts; impact on power generation mix; impact on electricity prices; impact on household budgets; impact on international competitiveness; employment, impact on export in the production deficit, impact on national currency balance account, impact on imports, linkage with foreign monetary and internal evaluation.

IC shall establish model, collect data and develop sectoral assumptions and scenarios and their assessments in coordination with the Modelling Expert and Sectoral Experts and submitted to the Team Leader. At the same time IC shall assess the EU Green Deal when developing cost of mitigation scenarios.

Sectoral experts shall develop set of targets on their sector in consultation with the stakeholders and guidance of Modelling Expert. The most important part of the target setting work is to determine the long term targets in a cost effective manner. To achieve this all sectoral expert shall work with Modelling Expert and the IC in close cooperation.

In total, 7 sectoral mitigation targets shall be prepared and completed with the Team leader, sectoral experts, modelling and economy modelling experts.

In cooperation with the Team Leader and Modelling expert &Economy modelling expert, UNDP Project Team, Implementing Partner, key stakeholders, line Ministries, umbrella organizations and sector associations, academia, NGO's, the data and information for methodology, data identification and sources, data analysis, scenarios, assumptions and targets will be developed.

Within the scope of the consultancy services, "*Reference Scenario Formulation Report*" to be developed will include at the minimum the following sections;

    a) Executive Summary

    b) Methodology

    c) Background

    d) Scenarios and Assumptions and Assessments

    e) Data Set and Data gaps

    f) Cost of long term targets (2050) and their assessment in terms of modelling

    g) Policy Recommendations for Short (2023), Mid (2030) and Long Term (2050) Targets

The IC as Economy Modeling Expert should be involved in executive summary, methodology, data set employed and gaps, Assumptions and cost of targets

The language for "Reference Scenario Formulation Report" shall be in Turkish.

Draft report shall be between **40-50 pages** long and the report will be sent to the Team Leader for review and will be approved by the UNDP Project Team by consultation with MoEU.

Task 3: Report on Macro economic Modelling results for each sector:

After the review and comments of the UNDP Project Team, Team Leader, MoEU, key stakeholders, line Ministries, umbrella organizations and sector associations, academia, NGO's, on *Reference Scenario Formulation Report,* the IC will start to prepare cost of mitigation targets and actions of each sector. The IC shall provide cost of determined sectoral mitigation potentials and actions projected for

2030 according to the guidance of sectoral experts and also Modelling Expert in order to achieve cost effective mitigation targets.

"**Macro Economic Modelling Report**" will be prepared, finalized and submitted by the IC with the contribution of the 7 Sectorial Experts, Team Leader and Modelling Expert to the UNDP Project Team for review and will be approved by the UNDP Project Team by consultation with MoEU.

IC will organize meetings with relevant stakeholders and finalize the macro economic modelling. Sectoral experts will also attend to the meetings.

The modelling expert will develop the sectoral mitigation potentials for key sectors. Using potentials, the abatement potential and cost of different mitigation options will be assessed and compared both from the view of society and economic agents who will be implementing these options by Economy Modelling Expert. So, both IC's work closely at this stage.

Using information already compiled under the Long term strategy and action plan work on current and projected greenhouse gas emissions in a business-as-usual scenario, the IC will estimate the country based on existing socio-economic development forecasts, at a minimum, reporting a 'with measures' projection, 'without measures' and 'with additional measures' projections cost analysis.

A 'with measures' projection shall encompass currently implemented and adopted policies and measures. If provided, a 'with additional measures' projection also encompasses planned policies and measures. If provided, a 'without measures' projection excludes all policies and measures implemented, adopted or planned after the year chosen as the starting point for that projection.

The IC will make a sensitivity analysis for the projections, the results of a sensitivity analysis for the reported GHG emissions together with a brief explanation of the methodologies and parameters used.
The IC will estimate the costs to the national economy of reducing emissions under different timeframes and trajectories. For example, compare the same volume of reductions made in 2030 and 2050, taking into account current policies, likely new investments in technology and infrastructure, and the impact of potential technological advances and technological transfer on costs, provide an overall economic assessment of the costs and benefits of moving to a low-carbon economy in the medium (2030), and long-term (2050).

The IC will estimate the net-cost of national policies that promote the adoption of appropriate low carbon development options, analyzes the short to long-term economic impacts of domestic action that lead to mitigation in greenhouse gas emissions (other than avoided adaptation costs), e.g. local co-benefits of reduced air pollution, security of energy supply, access to energy, forest management, energy efficiency, innovation, technology transfer, and competitiveness etc., the potential incremental costs of movement towards low carbon energy options from current sources.
The IC will review and analyze the country examples in terms of modelling and also assess the EU Green Deal relation for modelling and also assess the effects on GDP, employment, etc with macroeconomic indicators.

As per the mitigation scenarios, after the SW, the IC will work closely with the Modelling Expert, UNDP Project team and MoEU to develop possible mitigation scenarios providing robust justification on their suitability for Turkey. The scenarios will introduce different mitigation scenarios and different implementation options for each. And also mitigation potentials of each focus sector will also determined under this mitigation scenarios. After Modelling Expert prepared the mitigation scenario, the IC will prepare the cost of mitigation targets and actions.

The identification of targets that support the transition to a decarbonized economy but have not been included in legally binding national policy. Such targets ideally will include an indicative economy-wide GHG emissions target, for example a net-zero CO2 emissions target for 2050. Such indicative GHG emission targets will generally be informed by and even directly derived from theoretical scenario modelling. Such indicative and non-binding targets will provide a clear indication on the country's long term vision.

In cooperation with the Team Leader and Modelling Expert &Economy Modelling Expert, UNDP Project Team, Implementing Partner, key stakeholders, line Ministries, umbrella organizations and

sector associations, academia, NGO's, mitigation potentials of sectors mentioned above will be developed.

Within the scope of the consultancy services, "**Macro Economic Modelling Report**" will include at the minimum the following sections;

  a) Executive Summary

  b) Methodology

  c) Background

  d) Modelling Results

  e) Policy Recommendations for Short (2023), Mid (2030) and Long Term (2050) Targets and actions

The language for "Macro Economic Modelling Report" shall be in Turkish.

Draft report shall be between **40-50 pages** long and the report will be sent to the Team Leader for review and will be approved by the UNDP Project Team by consultation with MoEU.

Task 4: Set of Finance Sector Targets and Actions:

At this phase, after the approval of the **Sectoral Mitigation Potentials Report** prepared by modelling expert by MoEU, the IC shall determine the mitigation actions and their costs. According to the policy document, strategies, legislations, etc. sectoral experts will listed related mitigation actions in terms of climate change with the guidance of modelling work. At the same time, the IC shall assess the EU Green Deal when developing cost of mitigation actions.

Determination of long term targets for scenarios, development for short, medium and long term, ambition assessment, scenario development, emission projections, direct cost assessment, macroeconomic assessment, overall cost assessment, assessment of policies as part of scenarios will be prepared by the IC and the Modelling Expert. To achieve this, Sectoral Experts shall work with Modelling and Economy Modelling Experts in close cooperation.

In total, 7 sectoral mitigation actions shall be prepared and completed with the Team leader, sectoral experts, Modelling and Economy Modelling Experts.

The IC will develop the targets and actions with the 2030 and 2050 focus for the financial sector. The IC will organize the meetings with stakeholders and complete the targets and actions.

Within the scope of the consultancy service, "*Set of Finance Sector Targets and Actions*" will include at the minimum the following sections;

  a) Executive Summary

  b) Methodology

  c) Background

  d) Scenarios and Assumptions

  e) Set of mitigation targets (2050) with their objectives and their assessment

  f) Set of mitigation actions (2030) with their objectives and their assessment

The language for "Set of Finance Sector Targets and Actions" shall be in Turkish.

Draft report shall be between **100-150 pages** long and the report will be sent to the Team Leader for review and will be approved by the UNDP Project Team in consultation with MoEU.

3. DUTIES AND RESPONSIBILITIES OF THE INDIVIDUAL CONSULTANT

UNDP will mobilize an Individual Consultant (IC) as "Economy Modelling Expert" to provide framework based consultancy services for supporting the preparation of Turkey's National Climate Change Action Plan for 2023-2030 (NCCAP 2023-2030) and Turkey's National Climate Change Strategy for 2050. (Long Term -Low Emission Development Strategy (LT-LEDS)) within the scope of the Project. Within this scope, the IC will work closely with the UNDP Project Team and MoEU and will report to Team Leader and 7NC3BR Project Manager.

Within the scope of the assignment, IC shall perform the following generic functions (but not limited to):

- To prepare modelling part of Inception Report
- To review and analyse the national development programs, policies and measures which is directly affects GHG emissions.
- To provide Analysis of Costs of Mitigation targets and actions
- The analysis will provide information on the costs of adopting low carbon development options and will be used in the preparation of the Mitigation Plan.
- Using information already compiled under the LT-LEDS on current and projected greenhouse gas emissions in a business-as-usual scenario, estimate the country based on existing socio-economic development forecasts.
- At a minimum, reporting a 'with measures' projection, 'without measures' and 'with additional measures' projections cost analysis.
- A 'with measures' projection shall encompass currently implemented and adopted policies and measures. If provided, a 'with additional measures' projection also encompasses planned policies and measures. If provided, a 'without measures' projection excludes all policies and measures implemented, adopted or planned after the year chosen as the starting point for that projection.
- A sensitivity analysis for the projections, the results of a sensitivity analysis for the reported GHG emissions together with a brief explanation of the methodologies and parameters used.
- Estimating the net-cost of national policies that promote the adoption of appropriate low carbon development options.
- Analyzing the short to long-term economic impacts of domestic action that lead to mitigation in greenhouse gas emissions (other than avoided adaptation costs), e.g. local co-benefits of reduced air pollution, security of energy supply, access to energy, forest management, energy efficiency, innovation, technology transfer, and competitiveness etc.
- Analyzing the potential incremental costs of movement towards low carbon energy options from current sources.
- Estimating the costs to the national economy of reducing emissions under different timeframes and trajectories. For example, compare the same volume of reductions made in 2030 and 2050, taking into account current policies, likely new investments in technology and infrastructure, and the impact of potential technological advances and technological transfer on costs.
- Provide an overall economic assessment of the costs and benefits of moving to a low-carbon economy in the medium (2030), and long-term (2050).
- Review and analyze the country examples in terms of modelling and also assess the EU Green Deal relation for modelling.
- Assessment of effects on GDP, employment, etc with macroeconomic indicators
- Development of targets and actions with the 2030 and 2050 focus for the finance sector
- Determine, in collaboration and agreement with the other relevant members of the Assignment Team, the appropriate methodology

- Support the other team members for determination of the appropriate techniques and analyses for the activities described in the Terms of Reference
- Provide guidance and technical inputs for the relevant deliverables/outputs and draft the relevant entire and/or some related sections of the deliverables of the assignment primary responsibility of which are designated
- Participate in major events involving stakeholders (meeting, visits, assessments and workshops) as well as consultation sessions to be conducted with the participation of the UNDP, MoEU representatives
- One of the expert's responsibilities will include assisting the team of experts to develop GHG scenarios through applying projections.

The listed activities are subject to development and change with consent of UNDP 7NC3BR Project Manager. These possible developments and changes will be shared with the IC throughout the contract execution, the IC will conduct activities in accordance with the sections 2 and 3 of this Terms of Reference.

4. DURATION AND DELIVERABLES

The assignment is expected to start on **30 October 2021** and be completed by **31 May 2022**.

IC's deliverables will be subject to certification and approval by the UNDP 7NC3BR Project Manager within the deadlines, and the payment will be done upon approval of the reports by UNDP 7NC3BR Project Manager in consultation with UNDP, MoEU.

The deliverables expected from the IC as Economy Modeling Expert are as follows;

Major Activities	Deliverables	Estimated Number of Working Days to be Invested (Indicative)*	Due Date**
1. Inception – Desk Review and Scope of the Work 1.1. Time Plan: Preparation of the Report Development Activity Time Plan; 1.2. Desk Review: sectoral analysis, global, national and regional trends, Country examples; 1.3. Defining the Scope of the Reports: Defining/designing the method/models/tools and scope of the reports; 1.4. Policy Mapping: assessing the related policy documents and legislations. 1.5. Need Assessment: Determining the data needs and gaps for the development of long term strategy and action plan.	*Deliverable no.1:* *"Inception Report"*	5 working days	10 November 2021
1.5.Preparation of the Inception Report / Presentation; **2. Data Collection and Development of Model** 2.1.Development of model and data collection: surveys, interviews, workshops, platforms, coordination and communication etc. 2.2. Sector Working Group Meetings: Conducting regular meetings with Sector Working Groups; 2.3.Implementation: setting long term targets for 7 sectors	*Deliverable no.2:* *"Reference Scenario Formulation Report"*	50 working days	15 February 2022

2.4.Draft Report: Preparation data and scenario report 2.5.Feedback from stakeholders: Validation meetings/workshops; 2.6.Finalization Report **3. Macro Economic Modelling Report** 3.1. Development of model and data collection: surveys, interviews, workshops, platforms, coordination and communication etc. 3.2. Sector Working Group Meetings: Conducting regular meetings with Sector Working Groups; 3.3.Implementation: cost of mitigation potentials of sectors. Macro economic analysis	*Deliverable no.3:* *"Macro-Economic Modelling Report*	50 working days	15 April 2022
3.4.Draft Report: Preparation of long term targets and mitigation actions in line with INDC targets 3.5.Feedback from stakeholders: Validation meetings/workshops; 3.6.Finalization of Modelling Report	*Deliverable no.4:* *"Set of Finance Sector Targets and Actions*	15 working days	15 May 2022

* These number of days for each deliverable are solely just provided to give the IC an idea on the assignment and deliverables to be undertaken. The payments will be made in line with the table given under Section 8. PAYMENTS, irrespective of the number of days to be actually invested by the IC for the completion of each respective deliverable.

**Dates may be changed according to actual contract start date.

IC's deliverables will be subject to certification and approval by the UNDP 7NC3BR Project Manager in consultation with UNDP, MoEU.

Title Rights: The title rights, copyrights and all other rights whatsoever nature in any material produced under the provisions of this ToR will be vested exclusively in UNDP. Title Rights: The title rights, copyrights and all other rights whatsoever nature in any material produced under the provisions of this ToR will be vested exclusively in UNDP.

The acceptable minimum standards of the deliverables are as follows:

Deliverables	Acceptable Minimum Service Standards

Inception Report	Shall include analysis of existing situation and the work plan for the Report.
	
	   a) Executive Summary
	   b) Background
	   c) Turkey's Sectoral Overview and Analysis
	   d) Selected Methodology and its Scientific Justification
	   e) Modelling Overview and Analysis
	   f) Need assessment of data gaps, Data needs for model
	   g) Data Collection and Sectoral Policy mapping
	   h) Work Plan
	   i) Timeline
	   j) Comparative Analysis of Country examples

Reference Scenario Formulation Report	Shall involve the following areas (but not limited to them upon the IC's approved Inception Report delivery);
	
	   a) Executive Summary
	
	   b) Methodology
	
	   c) Background

	d) Scenarios and Assumptions and Assessments e) Data Set and Data gaps f) Cost of long term targets (2050) and their assessment in terms of modelling g) Policy Recommendations for Short (2023), Mid (2030) and Long Term (2050) Targets
Macro Economic Modelling Report	Shall involve the following areas (but not limited to them upon the IC's approved previous delivery); a) Executive Summary b) Methodology c) Background d) Modelling Results e) Policy Recommendations for Short (2023), Mid (2030) and Long Term (2050) Targets and actions
Set of Finance Sector Targets and Actions	Shall involve the following areas (but not limited to them upon the IC's approved previous delivery); a) Executive Summary b) Methodology c) Background d) Scenarios and Assumptions e) Set of mitigation targets (2050) with their objectives and their assessment f) Set of mitigation actions (2030) with their objectives and their assessment

5. REQUIRED QUALIFICATIONS

The following table demonstrates the required qualifications of the IC to be selected for this consultancy services.

	Minimum Requirements	**Assets**
General Qualifications	▪ BsC degree or advanced degree in environmental economics, development economics, or another relevant branch of economics (5 Points) ▪ Good command of English and proficiency in Turkish (5 Points).	▪ Masters of Ph.D. degree on economic modelling is an asset (5 Points) ▪
Professional Experience	▪ Minimum five (5) years professional experience in macro-economics of which 1 years in developing countries (15 Points) ▪ Experience in consulting private sector about compliance with finance policies (10 Points).	▪ Experience on/Knowledge of climate models and current methodologies in use for developing cost estimates for the

		impacts of climate change (5 Points)
Specific Experience	▪ Minimum five (5) years of experience in areas related to economic and bottom-up economy modelling including design, development, running and analysis based of economic models (10 Points). ▪ Experience in delivering strategic low-emissions development research related and data analysis project (5 Points)	▪ Knowledge of social, economic, environmental and climate energy, finance and industry statistics, including qualitative and quantitative methods of data collection and analysis (5 Points). ▪ Specific experience in the assessment of the abatement potential in the Industry and Energy sectors, Marginal Abatement Cost analysis and/or other tools that should be presented (5 Points).

Notes:
- Internships (paid/unpaid) are not considered professional experience.
- Obligatory military service is not considered professional experience.

Professional experience gained in an international setting is considered international experience.

UNDP is committed to achieving workforce diversity in terms of gender, race, ethnicity, indigenous identity, disability and culture. Individuals from all genders, minority groups, indigenous groups and persons with disabilities are equally encouraged to apply. All applications will be treated with utmost confidentiality.

6. INSTITUTIONAL ARRANGEMENTS

UNDP will provide to IC all relevant background documents. UNDP is not required to provide any physical facility for the work of the IC. However, depending on the availability of physical facilities (e.g. working space, computer, printer, telephone lines, internet connection etc.) and at the discretion of the UNDP and relevant stakeholders, such facilities may be provided at the disposal of the IC. UNDP will facilitate meetings between the ICs and other stakeholders, when needed.

All document and data provided to the IC are confidential and cannot be used for any other purposes or shared with a third party without any written approval from UNDP.

7. PLACE OF WORK

Place of work for the assignment is home-based and Ankara. All travel, accommodation and living costs in duty station (home based and Ankara) will be covered by the IC. The travel costs of joining and leaving the Duty Stations shall be also borne by the IC. The prospective ICs are expected to take this into consideration whilst determining the price of each deliverable. There is no other expected travel within the scope of the Project. In case of an unforeseen travel out of the duty station is needed, the travel and accommodation costs of these missions will be borne by UNDP. The cost and terms of reimbursement of any travel authorized by UNDP for IC must be negotiated prior to travel. The respective travels of the IC may either be;

- Arranged and covered by UNDP CO from the respective project budget without making any reimbursements to the IC or

- Reimbursed to the IC upon the submission of the receipts/invoices of the expenses by the IC and approval of the UNDP. The reimbursement of each cost item subject to following constraints/conditions provided in below table;
- covered by the combination of the above options

The following guidance on travel compensation is provided per UNDP practice.

Cost item	Constraints	Conditions of Reimbursement
Travel (intercity transportation)	Full-fare economy class tickets	1- Approval by UNDP of the cost items before the initiation of travel 2- Submission of the invoices/receipts, etc. by the consultant with the UNDP's F-10 Form 3- Acceptance and Approval by UNDP of the invoices and F-10 Form.
Accommodation	Up to 50% of the effective DSA rate of UNDP for the respective location	
Breakfast	Up to 6% of the effective DSA rate of UNDP for the respective location	
Lunch	Up to 12% of the effective DSA rate of UNDP for the respective location	
Dinner	Up to 12% of the effective DSA rate of UNDP for the respective location	
Other Expenses (intra city transportations, transfer cost from /to terminals, etc.)	Up to 20% of effective DSA rate of UNDP for the respective location	

As per UNDSS rules, the IC is responsible for completing necessary online security trainings and submitting certificates and travel clearance prior to assignment-related travels.

8. PAYMENTS

Payments will be made within 30 days upon acceptance and approval of the corresponding deliverables listed in "Section 4. Duration and Deliverables" by UNDP on the basis of payment terms indicated below table and the pertaining Certification of Payment document signed by the IC and approved by the responsible Project Manager.

#	Deliverable	Percentage of Payment
1	Deliverable no.1: Inception Report	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable
2	Deliverable no.2: Reference Scenario Formulation Report	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable
3	Deliverable no.3: Macro Economic Modelling Report	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable
4	Deliverable no.4: Set of Finance Sector Targets and Actions	Upon acceptance and approval of the Deliverable no.4 by UNDP, on the basis of the lump-sum price of the deliverables

If the deliverables are not produced and delivered by the IC to the satisfaction of UNDP as approved by the responsible Project Manager, no payment will be made even if the IC has invested time to produce and deliver such deliverables.

The amount paid to the expert shall be gross and inclusive of all associated costs such as social security, pension and income tax etc.

Tax Obligations: The IC is solely responsible for all taxation or other assessments on any income derived from UNDP. UNDP will not make any withholding from payments for the purposes of income tax. UNDP is exempt from any liabilities regarding taxation and will not reimburse any such taxation to the IC.